

UCCE SAN JOAQUIN COUNTY ASPARAGUS RESEARCH PROGRESS REPORT, 2012

Principal Investigator: Brenna Aegerter, Farm Advisor, UCCE San Joaquin County
Cooperating Personnel: Scott Whiteley, Jacob Loogman, and Cheryl Gartner, UCCE San Joaquin County
Collaborators: Mikeal Roose and Neil Stone, UC Riverside

ACKNOWLEDGEMENTS

The UCCE asparagus research program in San Joaquin County is currently conducted with the cooperation of Jeff Klein & Louis Casale (Klein Family Farms), Joe Ratto (Golden R) and Dino Del Carlo (Double D Farms); financial support has been provided by the California Asparagus Commission. Great appreciation is extended to our grower cooperators and to the Commission for their interest in and support of research.

UCCE Asparagus Variety Evaluation Trial established in 2007

This trial was established with one-year-old crowns in March of 2007 at Klein Family Farms, on Rindge Tract near Stockton, California. Asparagus lines included were from the breeding programs of UC Riverside, Rutgers University, California Asparagus Seed and Transplants, Aspara Pacific Ltd. and Brock Seed Company. The trial contains forty-four lines in total; sixteen in replicated blocks of green asparagus varieties, and twenty-nine in the observational block of green varieties.

The crowns were grown at a fumigated nursery site with loamy sand soil near Manteca. At planting, the one-year-old crowns were placed just over 8" apart within the row on 5.5 foot beds (center to center), for a plant population equivalent to 11,647 plants per acre. Stand establishment was evaluated during the summer of 2007 and was good to excellent for all varieties. The soil type at the trial site on Rindge Tract is an Egbert Muck.

In 2012, the variety trial was harvested for the fifth year; we cut the trial 30 times over a 72-day period from March 7th to May 18th. For the third year in a row, the line FCE4 x M256 ranked first in quality and second in total yield, out-yielded only by FCE6 x M256 (see Table 1). However, yield differences were not statistically significant this year, so we really cannot make any conclusions about yield advantage from a single year's harvest data. However, data on cumulative yield over the five years of harvest do reveal significant differences. Data from 2012 harvest are in Table 1, cumulative yield from 2008 through 2012 are in Table 3.

In general, spear quality was fair; led by FCE4 x M256, F132 x MCE4, DePaoli and FCE3 x M256. Data on all replicated varieties are presented in Table 1.

In the observational block of the trial, where twenty-nine varieties are evaluated only in a single row plot, the highest yielding lines were FCE7 x M120, F582 x MCE4, and F189 x MCE4. In all, 22 observational varieties out-yielded UC157 this year, and 17 observational varieties had spear quality ratings higher than UC157. Fifteen varieties had both higher yield and higher quality ranking than UC 157. See Table 2 for all observational results; note that data from the observational trial should be viewed with less confidence than replicated data. Cumulative data from all five harvests are in Table 4.

Table 1. 2012 ASPARAGUS CULTIVAR EVALUATION TRIAL
Klein Family Farms – Rindge Tract

(30 harvests over a 72-day period)

Replicated Green Lines

Cultivar/line	Yield lb/acre ¹	Average spear wt. (g) ¹	Spear quality ranking ²
FCE6 x M256	6,024	27.1	8
FCE4 x M256	5,778	28.1	1
NJ 1031	5,395	29.9	15
NJ 1019	5,356	26.5	11
Atlas	5,232	28.6	13
Grande	5,198	36.7	10
FCE3 x M256	4,829	24.9	4
F132 x MCE4	4,743	20.2	2
UC 157	4,725	29.7	7
Pacific 2000	4,664	22.1	12
NJ 953	4,661	22.1	16
Apollo	4,443	30.1	14
DePaoli	4,381	26.9	3
F582 x M256	4,091	30.8	9
FCE1 x M256	4,006	30.3	5
FCE2 x M256	3,507	25.4	6
Mean	4,814	27.5	
C.V. =	24.0%	14.7%	
MSD =	not sig.	10.4	

¹ Numbers represent the mean of four observations. Means followed by the same letter are not significantly different according to Tukey-Kramer method ($\alpha = 0.05$)

² Spear quality ratings based primarily on head tightness. Varieties ranked based on daily quality ratings averaged over the entire season (1 = highest quality)

Table 2. 2012 ASPARAGUS CULTIVAR EVALUATION TRIAL
Klein Family Farms – Rindge Tract

30 harvests over an 72-day period
Observation Green Lines

Cultivar	Yield ¹ lb/acre	Average ¹ spear wt. (g)	Spear quality ²
FCE7 x M120	7,827	28.6	16
F582 x MCE4	7,304	25.3	2
F189 x MCE4	7,165	29.1	1
NJ 956	6,933	29.3	18
F181 x MCE4	6,915	27.7	11
F597 x MCE4	6,843	25.7	4
NJ 951	6,517	29.1	22
F608 x MCE4	6,439	22.0	9
FCE5 x M256	6,350	23.1	10
FCE7 x M256	6,232	31.6	15
F597 x MCE2	6,198	28.3	17
F132 x MCE2	5,827	23.8	20
F172 x MCE4	5,709	28.8	3
3 x Phy20	5,709	23.1	23
FCE4 x A1	5,634	30.3	14
F608 x MCE2	5,402	34.1	8
FCE5 x A1	5,380	26.4	26
F583 x MCE4	5,199	32.0	6
F582 x A1	5,086	32.6	24
F177 x MCE4	5,011	22.5	7
FCE1 x A1	4,952	25.2	19
FCE6 x A1	4,731	32.0	5
F609 x MCE2	4,677	28.5	12
F586 x MCE1	4,638	30.3	13
FCE3 x A1	4,191	24.6	21
F600 x A1	4,147	22.8	27
74 X 22	3,731	28.6	29
73 X 22	3,465	20.4	28
Early California	2,782	27.9	25

¹ Data are from a single plot and should be viewed with less confidence than replicated data.

² Spear quality ratings based primarily on head tightness. Varieties ranked based on daily quality ratings averaged over the entire season (1 = highest quality)

Table 3. Yield in each of five harvests, plus cumulative 5-year yield; replicated varieties.

Variety/line	Yield (lbs/acre) ^x						5-yr cumulative
	2008	2009	2010	2011	2012		
FCE4 x M256	915 abc	3,659	6,044 ab	6,929 ab	5,778	23,325	a
NJ 1031	1,282 a	2,923	5,689 ab	7,790 a	5,395	23,078	a
NJ 953	1,355 a	3,531	6,044 ab	6,928 ab	4,661	22,518	ab
FCE6 x M256	833 abc	3,423	5,969 ab	5,333 abc	6,024	21,582	ab
FCE2 x M256	763 bc	3,576	6,685 a	6,472 abc	3,507	21,001	abc
DePaoli	891 abc	3,332	5,862 ab	6,141 abc	4,381	20,607	abc
Grande	1,015 abc	3,477	5,003 ab	5,576 abc	5,198	20,268	abc
UC 157	1,078 ab	3,459	5,218 ab	5,684 abc	4,725	20,162	abc
Pacific 2000	907 abc	3,271	4,879 ab	5,624 abc	4,664	19,346	abc
NJ 1019	627 bc	2,570	5,008 ab	5,501 abc	5,356	19,061	abc
Atlas	1,167 ab	3,300	4,390 ab	4,398 bc	5,232	18,487	bcd
FCE3 x M256	532 c	2,816	4,847 ab	5,367 abc	4,829	18,390	bcd
FCE1 x M256	652 bc	2,821	4,687 ab	5,383 abc	4,006	17,549	cd
F582 x M256	661 bc	2,957	4,292 ab	5,474 abc	4,091	17,474	cd
Apollo	642 bc	2,629	4,442 ab	4,969 bc	4,443	17,125	cd
F132 x MCE4	7 40 bc	1,834	3,102 b	3,752 c	4,743	14,172	d
Mean	874	3,083	5,126	5,708	4,814	19,335	
P value	<.0001	NS	0.034	0.0003	NS	0.0108	
CV (%)	22.9	25.5	23.6	17.9	24.0	16.1	

x Numbers represent the mean of four observations, except for the following varieties in 2009 and 2010 for which the number represents the least-squares mean of three observations: DePaoli, Atlas, Pacific 2000, and FCE6 x M256. Means in the same column followed by the same letter are not significantly different according to Tukey-Kramer method ($\alpha = 0.05$)

Table 4. Yield in each of five harvests, plus cumulative 5-year yield; observational varieties

Variety/line	Yield (lbs per acre)					5-yr cumulative
	2008	2009	2010	2011	2012	
FCE7 x M120	1,705	4,618	7,625	8,706	7,827	30,481
F582 x MCE4	2,183	4,711	6,714	9,209	7,304	30,122
NJ 951	1,237	4,276	9,017	7,441	6,517	28,488
F597 x MCE4	1,885	4,941	6,891	7,732	6,843	28,293
F181 x MCE4	1,276	4,839	6,421	8,723	6,915	28,173
F189 x MCE4	1,603	3,270	8,817	7,307	7,165	28,163
NJ 956	1,432	3,718	7,189	8,665	6,933	27,937
FCE5 x M256	1,180	3,971	7,350	8,434	6,350	27,285
F172 x MCE4	2,069	5,218	6,279	7,005	5,709	26,279
F608 x MCE4	1,227	3,783	5,490	7,858	6,439	24,797
3 x Phy20	872	3,579	7,065	7,359	5,709	24,584
F132 x MCE2	1,264	3,275	6,267	7,652	5,827	24,285
FCE4 x A1	1,164	3,944	6,393	6,764	5,634	23,899
F586 x MCE1	1,060	4,515	6,388	7,231	4,638	23,832
F582 x A1	959	3,486	6,114	7,076	5,086	22,720
FCE5 x A1	1,010	2,866	5,977	7,286	5,380	22,519
FCE1 x A1	1,208	3,323	6,237	6,347	4,952	22,067
F177 x MCE4	983	3,467	5,836	6,416	5,011	21,714
FCE7 x M256	989	3,446	4,386	6,533	6,232	21,585
F583 x MCE4	1,599	3,598	4,518	6,046	5,199	20,960
F608 x MCE2	1,089	3,206	4,535	6,289	5,402	20,520
F597 x MCE2	1,693	2,845	4,530	5,137	6,198	20,403
FCE3 x A1	784	3,415	5,034	6,229	4,191	19,653
F609 x MCE2	1,218	3,257	4,145	5,868	4,677	19,165
FCE6 x A1	910	3,301	4,360	4,695	4,731	17,996
F600 x A1	814	2,248	4,452	4,665	4,147	16,326
EARLY CALIFORNIA	1,871	2,928	3,895	2,998	2,782	14,473
74 X 22	626	2,526	3,495	3,814	3,731	14,192
73 X 22	487	2,348	3,676	4,024	3,465	14,000